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(54) Title: PROCESS FOR THE PREPARATION OF 1,1,1,3,3-PENTAFLUOROPROPANE AND 1,1,1,2,3-PENTAFLUOROPROPANE

(57) Abstract: A process is disclosed for the manufacture of  $\text{CF}_3\text{CH}_2\text{CHF}_2$  and  $\text{CF}_3\text{CHFCH}_2\text{F}$ . The process involves (a) reacting hydrogen fluoride, chlorine, and at least one halopropene of the formula  $\text{CX}_3\text{CCl}=\text{CClX}$  (where each X is independently F or Cl) to produce a product including both  $\text{CF}_3\text{CCl}_2\text{CClF}_2$  and  $\text{CF}_3\text{CClFCCl}_2\text{F}$ ; (b) reacting  $\text{CF}_3\text{CCl}_2\text{CClF}_2$  and  $\text{CF}_3\text{CClFCCl}_2\text{F}$  produced in (a) with hydrogen to produce a product including both  $\text{CF}_3\text{CH}_2\text{CHF}_2$ , and  $\text{CF}_3\text{CHFCH}_2\text{F}$ ; and (c) recovering  $\text{CF}_3\text{CH}_2\text{CHF}_2$  and  $\text{CF}_3\text{CHFCH}_2\text{F}$  from the product produced in (b). In (a), the  $\text{CF}_3\text{CCl}_2\text{CClF}_2$  and  $\text{CF}_3\text{CClFCCl}_2\text{F}$  are produced in the presence of a chlorofluorination catalyst including a  $\text{ZnCr}_2\text{O}_4$ /crystalline  $\alpha$ -chromium oxide composition, a  $\text{ZnCr}_2\text{O}_4$ /crystalline  $\alpha$ -chromium oxide composition which has been treated with a fluorinating agent, a zinc halide/ $\alpha$ -chromium oxide composition and/or a zinc halide/ $\alpha$ -chromium oxide composition which has been treated with a fluorinating agent.



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